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AVIATION AND COMMUNICATIONS OF THE HOUSE
SCIENCE AND TECHNOLOGY COMMITTEE, HOUSE OF REPRESENTATIVES
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GENERAL STATEMENT

Mr. Chairman and members of the committee, I would like to introduce Mr. Edward R. Mathews, the Director of the Transportation Test Center. We appreciate the opportunity to appear before you to discuss the research and development activities of the Federal Railroad Administration (FRA). The vast majority of FRA's technology R&D efforts are concentrated on near-term improvements in equipment, facilities and procedures to enhance safety, improve efficiency and reduce adverse environmental impacts. The chief users of the research results include, for example, the Office of Safety, the Northeast Corridor Project, railroads, unions, and suppliers. Several parallel strategies are pursued to ensure the implementation of results, including, for example, the involvement of users in ranking, planning and conducting research projects.

TRACK, EQUIPMENT AND PERSONNEL SAFETY

Safety R&D continues to hold the highest priority among research programs. In fact, we have reorganized our R&D program structure

to place even greater emphasis on safety. All of the safety-related subprograms are now included under the Track, Equipment and Personnel Safety program. We are requesting \$28.4M for this program, which amounts to approximately half of our Research and Development funds. The program is aimed at the development of safety-related improvements in track and rolling stock as well as operating and maintenance practices. It addresses both the prevention and detection of unsafe conditions.

Major recent activities in safety research include the following:

- We continued the operation of the Facility for Accelerated Service Testing (FAST) at the Test Center to obtain the equivalent of 14-16 years of in-service experience in two years of testing. Implementation of the results, which are being published in a series of reports, is ensured by extensive industry participation and cost sharing.
- The Materials Transportation Bureau has published a Final Rule (Docket HM-144) concerning tank car safety regulations based on performance specifications developed under FRA's Safety Research Program. These performance specifications, which cover certain tank cars carrying compressed gases, are the culmination of over six years of research and development, most of which was conducted in cooperation

with the Association of American Railroads and the Railway Progress Institute. The safety devices included in the performance specifications (couplers, head shields and insulation) successfully withstood 90,000 miles of testing on FAST. The Test Center is currently running certification tests on various insulation and cooling material.

- Performance specifications were developed for locomotive and caboose windows to protect occupants from vandalism. The specifications were incorporated in an Announcement of Proposed Rule Making issued by FRA's Office of Safety.
- A prototype wayside vehicle inspection station was installed at the Transportation Test Center. It will be used to test concepts for detecting vehicle safety defects to prevent derailments.
- FRA initiated a major test investigating dynamic loads of two types of six-axle locomotives on a segment of rough track at TTC. The results of the test will support the design of a facility to test the safety of vehicles moving over rough track and help to define performance specifications regarding track/train dynamics. This facility will be constructed in FY 1980.
- Strobe lights to improve locomotive visibility at grade crossings were developed by joint FRA/industry efforts.

As a result of these efforts, several railroads have begun installing strobe lights on their locomotives to improve safety.

FY 1980 activities are highlighted by the continued operation of FAST, the development of a knowledge base to support revisions to the Track Safety Standards, and efforts to reduce injuries to railroad employees working around rolling stock.

RAILROAD OPERATIONAL IMPROVEMENTS

The Railroad Operational Improvements program is structured to identify, develop and evaluate technology and operating procedures which would improve service, conserve energy, and reduce costs of railroad freight operations. The outputs from this research are in the form of performance specifications and operational guidelines which will be used by railroads to upgrade or improve their equipment, facilities, and operating procedures. These outputs will also stimulate the private sector to develop new and improved technologies and management techniques. Highlights of recent efforts include the following:

- We began a demonstration project on the Milwaukee Road to develop improvements in rail/highway intermodal operations and marketing. The results to date are very promising, in fact, the experiment has been returning a profit on a full-cost basis since January 15, 1979.

- A performance specification was developed for a low-profile, lightweight intermodal car to resolve clearance problems in the Northeast.
- FRA introduced a classification yard design methodology which is currently being used and tested in two yard rehabilitation projects on Conrail and the Boston and Maine.
- Preliminary performance and test specifications for general purpose freight car trucks were completed.

We are requesting \$6.9 million for this program in FY 1980, \$4.5 million of which will be used for non-hardware related research. Examples of major FY 1980 activities include the continued development of a classification yard design methodology, the evaluation of alternate locomotive fuels, and the exchange of technology with foreign countries. Funding is also provided for the continuation of the freight car management subprogram and for an expansion of the labor/management subprogram.

IMPROVED PASSENGER SYSTEMS

The Improved Passenger Systems program supports Amtrak and the Northeast Corridor Project by evaluating passenger trains and developing and testing improved passenger vehicle components and electric traction equipment. During the FY 1980 budget review process, the program was restructured to place greater emphasis on supporting the Northeast

Corridor Project. I would like to cite several examples of recent major activities:

- FRA completed evaluation reports for six foreign passenger train systems to provide technical support for equipment acquisition decisions by Amtrak and the Northeast Corridor Project.
- We conducted the study on railroad electrification which was part of the Secretary's report to Congress entitled "A Prospectus for Change in the Freight Railroad Industry."
- A regulation promulgated by the Environmental Protection Agency requires the replacement of poisonous polychlorinated biphenyls now used as a transformer coolant on-board electric traction equipment. FRA has identified a possible replacement which is being evaluated and results to date are promising.

We are requesting \$3.3 million for the Improved Passenger Systems program in FY 1980. Major FY 1980 activities include, for example, the evaluation of the ASEM-7 (ASEA) locomotive and the radial axle truck. We will also study new catenary designs and improved power conditioning equipment.

TRANSPORTATION TEST CENTER

The Transportation Test Center provides vital support to FRA and UMTA R&D programs in the form of test facility construction and maintenance,

as well as test operations. Test capabilities are also provided to private industry on a cost-reimbursable basis. Example of major activities include the following:

- We selected a contractor and began work on the electrification of the 14-mile test loop at the Test Center, a project which is being funded by the Northeast Corridor Project. The facility will be used to test and evaluate electric locomotives and the catenary design for the Northeast Corridor Project.
- Acceptance and engineering tests were completed on the Advanced Concept Transit Train.

We are requesting \$12 million for the Test Center in FY 1980. FY 1980 activities are highlighted by the construction of the Safety Acceptance Facility for Equipment (SAFE), a facility which will be used to evaluate the dynamic response of rail vehicles operating over known track perturbations. SAFE data, when used in conjunction with the Rail Dynamics Laboratory and FAST results, will help research to determine whether specific vehicles can operate safely over the type of rough track which now exists in revenue service. This will permit the identification of dynamic safety problems before a design is introduced into service, thereby avoiding the kinds of problems encountered, for example, with six-axle locomotives.

POLICY SUPPORT

The FY 1980 Research and Development budget request also includes \$5.6 million for the Policy Support program, which provides direct support to the Administrator in developing Departmental railroad policy. Activities under this program include studies of the railroads' physical and financial structure and operating practices and the development of data bases and computer models. This work supports FRA's efforts to establish an environment for the restructuring and revitalization of the railroad industry through regulatory reform and financial assistance.

In conclusion, we will continue to direct FRA's R&D efforts toward achievement of near-term cost-effective results which will improve safety and assist the railroad industry in trying to resolve crucial technical and operational problems. Our total R&D request for FY 1980 is \$56.3 million, of which \$46.2 million is for technological programs and \$10.1 million is for non-hardware related programs.

Mr. Chairman, that concludes my prepared statement. If it is agreeable to the committee, I would like to show two short films totalling approximately ten minutes on FAST and the Rail Dynamics Laboratory, two of our more significant programs. Then Mr. Mathews and I would be happy to answer any questions you may have.